These materials were developed by CalRecycle staff for the monthly meeting and are posted as reference documents for the local government, interest groups and industry staff who attended this meeting.

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AB 341 Goal: 75% Recycling by 2020

Creating New Jobs Through Increased Recycling, Processing and Remanufacturing

Presented by
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April 16, 2013

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Achieving the AB 341 goal of 75% recycling

- Move 22 million tons/year from landfills, that…
- Translates to 100,000 more jobs in California.

Review of Prior Studies on Job Creation in Recycling

16 Studies were selected, including:

- State, Regional and National in scope, or…
- Focused on specific materials
  - Government sponsored
  - Academic research
  - Industry studies
  - Private organizations studies and research

12 Primary Studies

Title	Date
California Recycling Economic Information Study	Jul., 2001
The Economic Impact of Waste Disposal and Diversion in California	Apr., 2001
U.S. Recycling Economic Information Study	Jul., 2001
Recycling and Economic Development: Review of Literature	Apr., 2009
Recycling Economic Information Study Update: DE ME MA NY PA	Apr., 2009
More Jobs, Less Waste: Potential for Job Creation in the UK and EU	Sept., 2010
California's Green Economy: Summary of Survey Results	Oct., 2010
Cost Study on Commercial Recycling	Jan., 2011
More Jobs, Less Pollution: Growing the Recycling Economy in the U.S.	Nov., 2011
Returning to Work: Domestic Jobs Impacts from Recycling Beverage Containers	Dec., 2011
Many Shades of Green: Regional Distribution and Trends in California's Green Economy	Jan., 2012
The West Coast Clean Economy: Opportunities for Investment and Job Creation	Mar., 2012

Problems Inherent in Calculating Precise Estimates

- Varying definitions of “Clean”, “Green” or “Recycling”
- “Direct” employment, versus “Indirect” or “Induced” employment
  - *Results in non-comparability*
- Different ranges of activities included in “Recycling”:
  - *Collection*
  - *Sorting/Brokering*
  - *Processing*
  - *Re-manufacturing*

California Recycling Jobs: Current Estimates

Study	Year Pub. (Data Yr.)	Estimated No. of CA Recycling Jobs and Category Definitions	
California's Green Economy: Summary of Survey Results	2010 (2009)	115,400	Recycling existing materials excluding manufacturing
U.S. Recycling Economic Information Study	2001 (1997)	62,700	Recycling & Reuse excluding virgin material preparation and downstream conversion
Many Shades of Green: Trends in California's Green Economy	2012 (2009)	26,500	Waste Management and Remediation Services
The West Coast Clean Economy	2012 (2010)	15,700	Recycling and Reuse

Current Findings from National Studies on Recycling Jobs

- Processing and manufacturing sectors entail 3 to 11 times more jobs than collection and landfilling.
- Inerts and paper at the lower end, plastics and metals at the higher end.
- Average of recycled materials collection and secondary processes is 5.3 jobs per 1000 tons.
- Each new job creates at least one additional job, indirectly or induced.

Current Job Distribution, by Activity Type

- Collection and landfill disposal account for a median value of 1.35 jobs per 1000 tons.
- Curbside recycling, MRF operations and transfer entail about 2.9 jobs per 1000 tons of recycled materials
- Source separated recycling generates about 7.8 jobs per 1000 tons

Current Jobs Distribution by Material Type

Re-processing and remanufacturing vary by type of material:

- Wood: 2.8 jobs/1000 tons
- Paper: 3.4 jobs/1000 tons

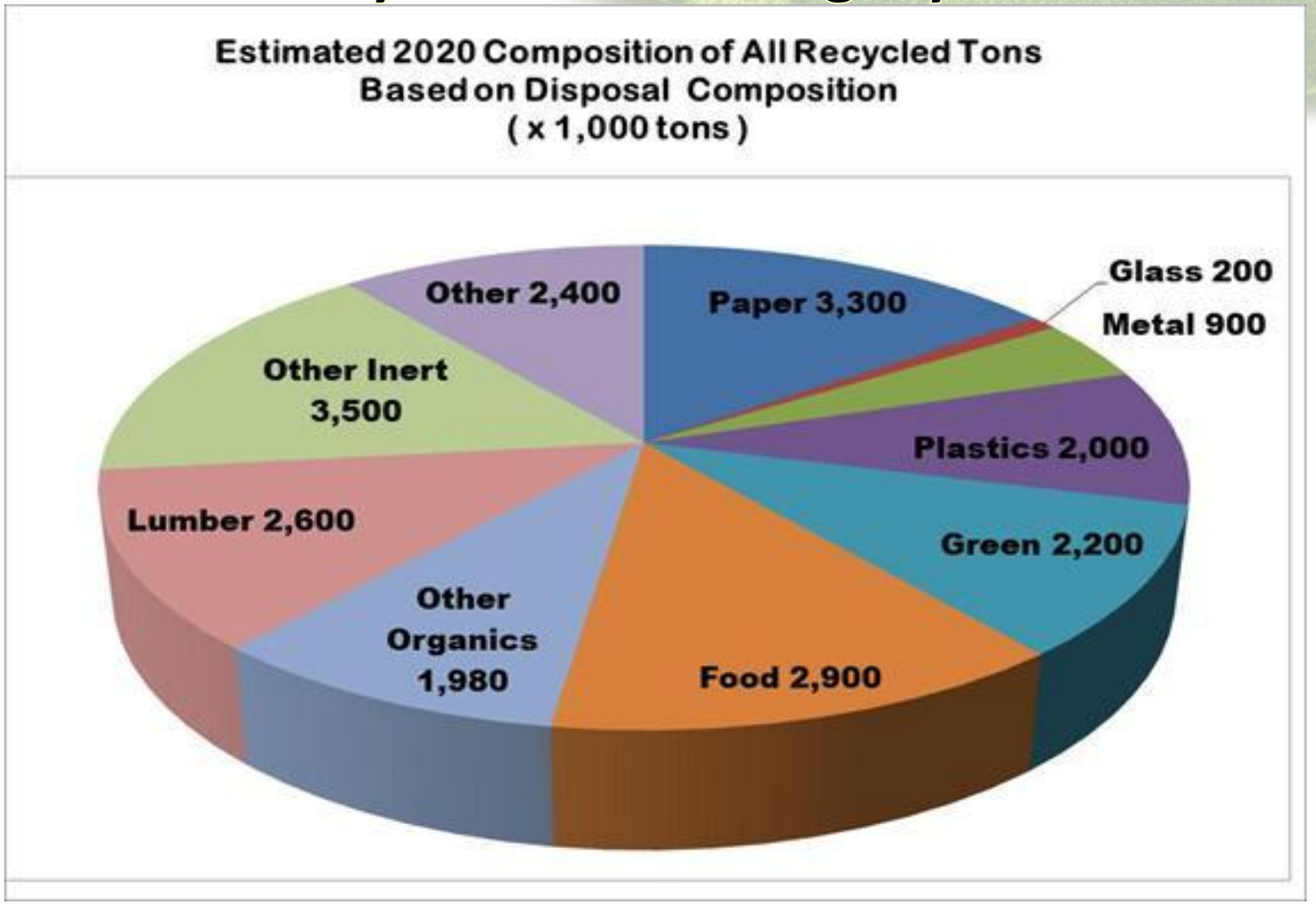
  to

- Plastics: 9.2 jobs/1000 tons and
- Aluminum: 17.6 jobs/1000 tons.

Developing a Forecast for California Future Recycling Jobs

- Determine future potential material availability
- Derive relevant findings from National Job Studies
- Use current ratio of job creation for each 1,000 tons of material
- Calculate estimated future job creation in California

2020 Additional Tons Recycled, by Material Category



Calculate Future Job Creation in California: Multiply Expected Tons by Job Creation Factors

22 Million Tons Recyclables			Employment Associated with Recycling Activities				
			Job Factors (Jobs/1,000 tons)		Number of Jobs		
Material Type	Material Compo-sition Share	Material Tons x 1,000	Collection & Processing (2020)	Manu-facturing	Collection & Processing (2020)	Manu-facturing	TOTAL Added Jobs
Paper	15%	3,300	3.45	4.16	11,385	13,728	25,113
Glass	1%	220	3.45	7.85	759	1,727	2,486
Metal	4%	880	3.45	4.12	3,036	3,626	6,662
Plastics	9%	1,980	3.45	9.24	6,831	18,295	25,126
Green	10%	2,200	1.95	na	4,290	na	4,290
Food	13%	2,860	1.95	na	5,577	na	5,577
Other Organics	9%	1,980	1.95	na	3,861	na	3,861
Lumber	12%	2,640	3.45	2.50	9,108	6,600	15,708
Other Inert	16%	3,520	1.95	na	6,864		6,864
Other	11%	2,420	1.45	na	3509	na	3,509
Total	100%	22,000			55,220	43,976	99,196

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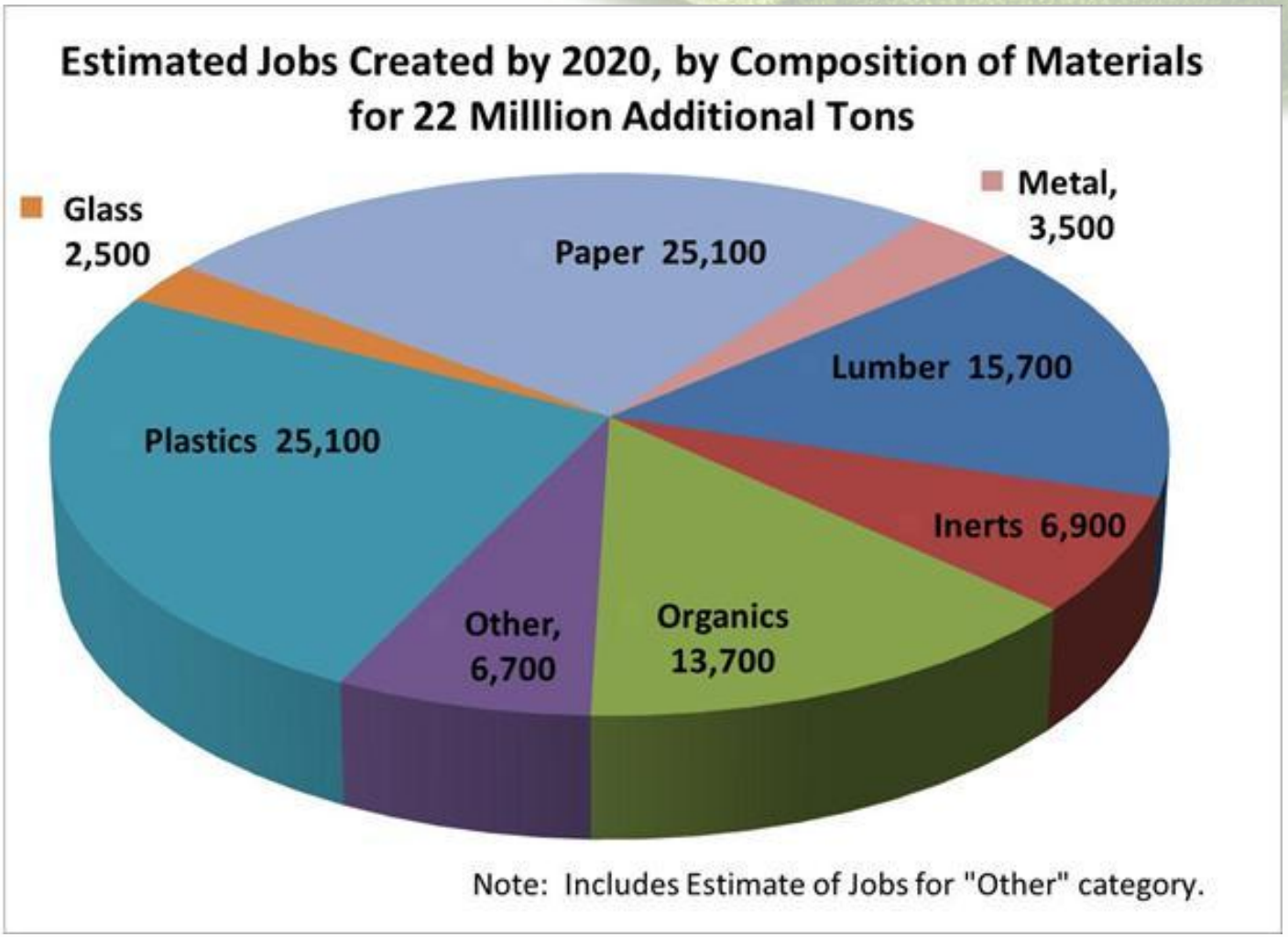
Job Creation Highlights: Nearly 100,000 New Recycling Jobs by 2020

- Over 25,000 jobs gained in each :
  - paper,
  - plastics and
  - Lumber & inert materials sectors

- Nearly 14,000 jobs in organic materials
  - comprise one-third of the total material types,
  - require less secondary processing or remanufacturing

Forecast of California New Recycling Jobs - 2020



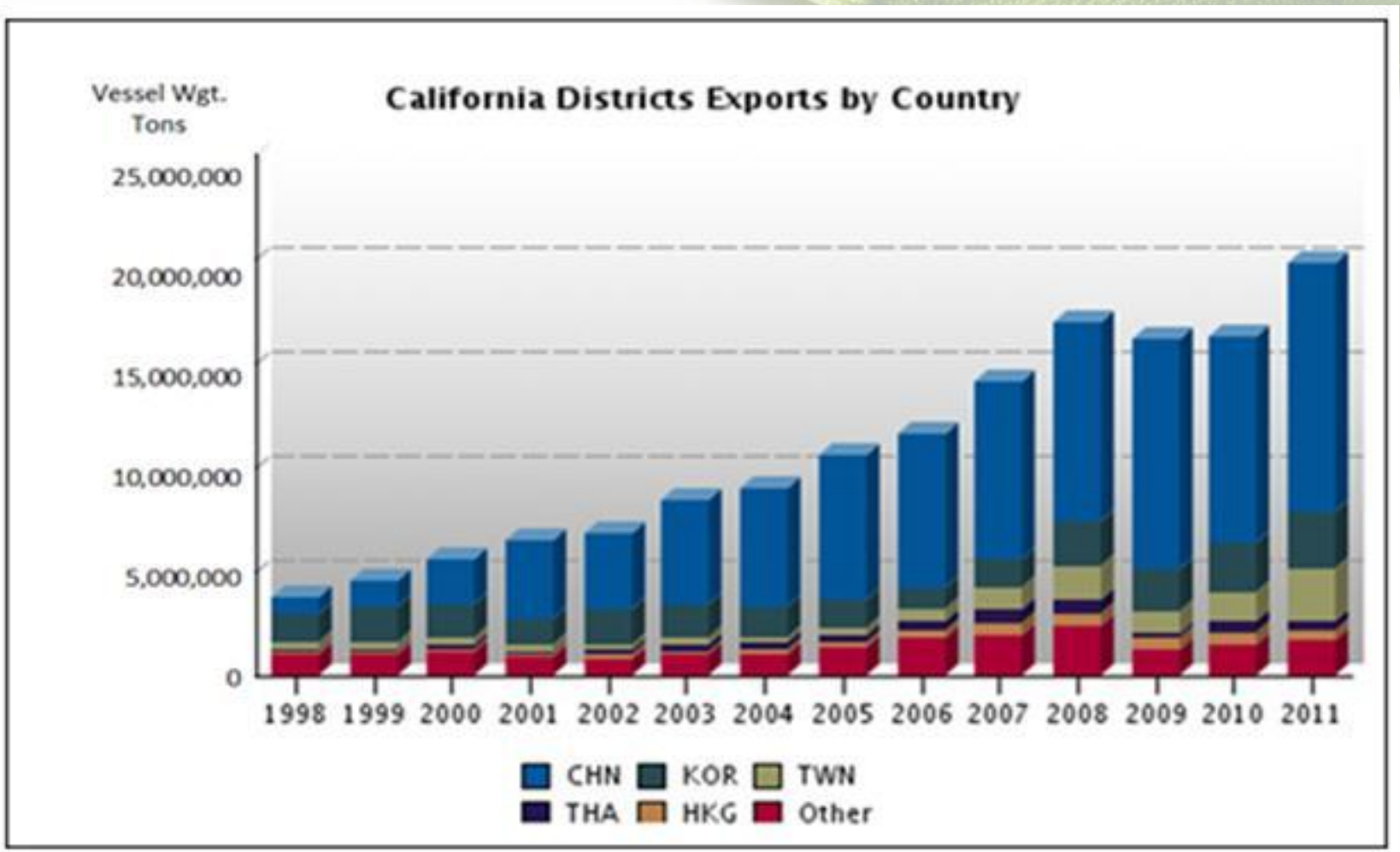
Additional Job Creation Highlights

- Each new job created will indirectly create or induce one additional job
- As tons recovered increases, collection and sorting jobs increase
- Major source of new jobs will be in processing and remanufacturing

Creation of Future Recycling Jobs in California is Greatly Affected by Factors Including:

- Contamination of collected materials
- Availability of number of composting or anaerobic digestion facilities
- Siting and financing of new manufacturing facilities
- Export trends of recycled materials

All CA Recyclables Exports 1998 - 2011
Trend is Increasing Tons



Current Exports Overview

- The vast majority of exported material by tonnage is paper, with more than 50% of the recyclables market.
- China receives most of this tonnage.
- Metals make up more than 80% of the dollar value.

Infrastructure: Collections & Processing

Over 1500 facilities in California process or use recovered materials:

- 139 - sort and recover materials from mixed recyclables and/or mixed solid waste
- 376 - transfer stations process sorted recycled materials to add value or create industrial feedstock
- 245 - C & D processing facilities
- 107 - scrap metal processors
- 67 - paper stock processors

Infrastructure Assessment

- Recycled material processing capacity seems to be sufficient for current collections
- Processing capacity may be insufficient to handle additional 22 million tons recycled in order to achieve 75%

Infrastructure: Remanufacturing Capacity

The estimated unused recycled material manufacturing capacity in California includes:

- Glass Product Manufacturing – 0.1 M Tons
- Plastics Manufacturing – 0.07 M Tons
- Paper/Paperboard Manufacturing – .005 M Tons
- Organics Management – 2 M tons

Remanufacturing capacity is insufficient to handle additional 22 million tons recycled in order to achieve 75%

Infrastructure: Organics Processing

Organics processing infrastructure:

- 130 - Composting facilities
- 160 - Chip and grind facilities
- 25 - Biomass conversion facilities

Overall capacity will be insufficient to handle additional expected diversion.

Capacity Limitation in Material Processing and Manufacturing

Additional capacity will be needed to:

- Meet AB 341 statewide goal of 75% recycling, that is anticipated to result in 22 million additional tons available
- Process the 22 millions tons that are currently being exported.

Questions ?

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